

Claims

[c1] What is claimed is:

1.A multifunctional optical device, comprising:
a switch for switching the multifunctional optical device between a mouse mode, a camera mode, and a scanner mode;
an optical sensor array comprising a plurality of optical sensors for capturing images and providing image information;
a processor for receiving the image information from the optical sensor array and generating processed data, wherein the processor generates the processed data by calculating a location address if the multifunctional optical device is in the mouse mode, processes the captured image if the multifunctional optical device is in the camera mode, and combines a set of linear images if the multifunctional optical device is in the scanner mode;
and
an interface port for interfacing the multifunctional optical device with a host computer and for outputting the processed data from the processor to the host computer.

[c2] 2.The multifunctional optical device of claim 1 wherein

each optical sensor in the optical sensor array provides image information for only one color selected from a group of at least three component colors.

- [c3] 3.The multifunctional optical device of claim 2 wherein only optical sensors providing image information for a first color are activated when the multifunction optical device is in the mouse mode.
- [c4] 4.The multifunctional optical device of claim 1 wherein the optical sensor array is logically divided into a plurality of blocks of optical sensors, and when the multifunctional optical device is in the scanner mode, successive blocks of optical sensors are sequentially activated to capture the set of linear images.
- [c5] 5.The multifunctional optical device of claim 1 further comprising a memory for storing device settings of the multifunctional optical device and for temporarily storing images captured by the optical sensor array.
- [c6] 6.The multifunctional optical device of claim 1 further comprising a first light source for illuminating a surface on which the multifunctional optical device is placed with light of a first color when the multifunctional optical device is in the mouse mode.
- [c7] 7.The multifunctional optical device of claim 1 further

comprising a second light source for illuminating a surface on which the multifunctional optical device is placed with light of a second color when the multifunctional optical device is in the scanner mode.

- [c8] 8.The multifunctional optical device of claim 1 wherein the processor is a digital signal processor (DSP).
- [c9] 9.The multifunctional optical device of claim 1 wherein the optical sensor array is a charge coupled device (CCD).
- [c10] 10.The multifunctional optical device of claim 1 wherein the optical sensor array is a complimentary metal oxide semiconductor (CMOS) optical sensor array.
- [c11] 11.The multifunctional optical device of claim 1 wherein the interface port interfaces with the host computer through a communication protocol selected from a group consisting of IEEE 802.11a, IEEE 802.11b, IEEE 802.11g, Bluetooth, USB, PS/2, and IEEE 1394.
- [c12] 12.A multifunctional optical device, comprising:
a switch for switching the multifunctional optical device between a mouse mode, a camera mode, and a scanner mode;
an optical sensor array comprising a plurality of optical sensors for capturing images and providing image infor-

mation, wherein each optical sensor in the optical sensor array provides image information for only one color selected from a group of at least three component colors; a processor for receiving the image information from the optical sensor array and generating processed data, wherein the processor generates the processed data by calculating a location address if the multifunctional optical device is in the mouse mode, processes the captured image if the multifunctional optical device is in the camera mode, and combines a set of linear images if the multifunctional optical device is in the scanner mode; a memory for storing device settings of the multifunctional optical device and for temporarily storing images captured by the optical sensor array; and an interface port for interfacing the multifunctional optical device with a host computer and for outputting the processed data from the processor to the host computer.

[c13] 13.The multifunctional optical device of claim 12 wherein only optical sensors providing image information for a first color are activated when the multifunctional optical device is in the mouse mode.

[c14] 14.The multifunctional optical device of claim 12 wherein the optical sensor array is logically divided into a plurality of blocks of optical sensors, and when the multifunctional optical device is in the scanner mode,

successive blocks of optical sensors are sequentially activated to capture the set of linear images.

- [c15] 15.The multifunctional optical device of claim 12 further comprising a first light source for illuminating a surface on which the multifunctional optical device is placed with light of a first color when the multifunctional optical device is in the mouse mode.
- [c16] 16.The multifunctional optical device of claim 12 further comprising a second light source for illuminating a surface on which the multifunctional optical device is placed with light of a second color when the multifunctional optical device is in the scanner mode.
- [c17] 17.The multifunctional optical device of claim 12 wherein the processor is a digital signal processor (DSP).
- [c18] 18.The multifunctional optical device of claim 12 wherein the optical sensor array is a charge coupled device (CCD).
- [c19] 19.The multifunctional optical device of claim 12 wherein the optical sensor array is a complimentary metal oxide semiconductor (CMOS) optical sensor array.
- [c20] 20.The multifunctional optical device of claim 12 wherein the interface port interfaces with the host com-

puter through a communication protocol selected from a group consisting of IEEE 802.11a, IEEE 802.11b, IEEE 802.11g, Bluetooth, USB, PS/2, and IEEE 1394.